REMARKS

In accordance with the foregoing, claims 1, 9, 12, 14-18, 21, 32 have been amended. Claim 19 has been cancelled, without prejudice or disclaimer. Claims 1-32 are pending and under consideration.

REJECTION UNDER 35 U.S.C. § 101

Claims 1-17 stand rejected under 35 U.S.C. § 101 as not falling within one of the four statutory categories of invention. This rejection is respectfully traversed.

In view of the amendments herein made to claims 1, 9, 12, and 14-17, Applicant herein submits that claims 1-17 satisfy the requirements of 35 U.S.C. § 101.

Withdrawal of this rejection and allowance of all pending claims is respectfully requested.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-6, 8, 18-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by McIlvain et al. (McIlvain), U.S. Patent No. 5,765,200 in view of O'Connor et al. (O'Connor), U.S. Pat. App. Pub. No. 2005/0244138; claims 21, 23-26, 28-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable by Aoki et al. (Aoki), U.S. Patent No. 6,009,231 in view of Barton et al. (Barton), U.S. Patent No. 6,233,389 in further view of O'Connor; claims 7, 9-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McIlvain in view of O'Connor in further view of Aoki; claims 22 and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Aoki in view of Barton, in further view of Peters et al. (Peters), U.S. Patent No. 5,884,284. These rejections are respectfully traversed.

By way of review, McIlvain is directed towards controlling logical positioning within a storage device of a computer system so that the storage device can be accessed by one or more of a plurality of processors within the computer system. In order to achieve this, McIlvain proposes a logical position indicator, maintained by the storage controller such that the storage controller controls the logical positioning within the storage device. In this way, in McIlvain, the logical positioning mechanism of the present invention shifts the logical positioning responsibility from the host processors to the storage controller.

Amended claim 1 at least recites:

> using a processor to assign physically discontinuous free blocks in
> a disk recording area to sequential logical blocks in a circular
> buffer, based on the control information when a time-delayed
> viewing mode is selected

Therefore, claim 1 requires a circular buffer, assigning physically discontinuous free blocks to sequential logical blocks in a circular buffer, and that the assignment sequentially in the logical buffer is based on control information.

A. McIlvain Does Not Discuss Assignment of Blocks

Regarding McIlvain, in col. 5, lines 20-52, FIG. 2 is discussed as an example of a storage device, with a plurality of logical positions, and in one example, that a logical position can represent a block. However, absent from the discussion of FIG. 2 is how the logical positions are assigned, or whether they are assigned to "physically discontinuous free blocks," as claimed.

Rather, McIlvain only discusses a circular buffer in col. 30, lines 33-39. Here, McIlvain discusses that a data structure, as recited in claim 1 of McIlvain, may be a circular buffer. Claim 1 of McIlvain discusses a data structure to be a format for accessing one or more locations within the storage device. However, McIlvain fails to discuss or suggest that in the circular buffer style of data structure, the physical blocks of the storage device referred to in the circular buffer are "discontinuous."

Further, McIlvain fails to describe or suggest whether the logical assignment of the storage device using the circular buffer is sequential. That is, McIlvain fails to describe or suggest the claimed "assign ... free blocks in a disk recording area to sequential logical blocks in a circular buffer." Rather, McIlvain merely discusses what the circular buffer may represent (e.g., a block or record on the storage device) or how the circular buffer can be addressed (e.g., addressable by CCHHR, or using fixed block addressing). However, how each logical address of the circular buffer is assigned is not discussed.

Accordingly, as assignment of the logical blocks is not discussed in McIlvain, McIlvain fails to further discuss or suggest that that the assignment is "based on the control information," as claimed.

As further detailed in claim 4, "the control information comprises file attribute information, file assignment information, free block information for each track, and circular buffer block information." In the rejection against claim 4, the Office Action cites to col. 9, lines 5-47 of McIlvain. However, here, McIlvain is not discussing the assignment of physically discontinuous blocks to sequential logical blocks in a circular buffer. Rather, here, McIlvain discusses the format that a host processor uses to instruct the storage controller (and specifically, the logical positioning mechanism therein (see FIG. 1 of McIlvain)), when the host processor wishes to perform an operation against the shared storage device. In col. 9, lines 40-67, McIlvain

discusses an example of such an operation, which would be, for example, writing records to a DASD data log set.

Applicants submit that a format for requesting to write to a DASD data log set between the host computer and the logical positioning mechanism therein cannot be equated to the claimed "control information," at least as such an write request discussed in McIlvain is not used to "assign" the logical blocks in a circular buffer, but rather is used for writing records to a DASD data log set, for example. As discussed above, McIlvain is silent regarding how each logical address of the circular buffer is assigned.

Therefore, Applicant submits that McIlvain fails to describe or suggest the claimed "using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer, based on the control information when a time-delayed viewing mode is selected.

B. O'Connor Does not Discuss Assignment of Blocks

Applicant further submits that O'Connor fails to cure the deficiency of McIlvain, and also fails to describe or suggest the claimed "using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer, based on the control information when a time-delayed viewing mode is selected."

The Office Action cites to para. [0036]-[0037] of O'Connor, wherein O'Connor discusses that as newer portions of a video stream are received, they overwrite the older portions of the video stream saved in the random access storage unit, and therefore, the temporary buffering of the video stream acts as a circular buffer. O'Connor further discusses that the processor maintains pointers to the beginning and ending points of the temporary buffer, and that the processor reassigns the pointers as newer portions of the video stream are received and/or older portions of the video stream are overwritten.

However, whether the pointers in O'Connor correspond to "physically discontinuous free blocks in a disk recording area," is not described or suggested.

The Office Action appears to interpret FIG. 4 of O'Connor as illustrating storing information in sectors that are not adjacent to each other and therefore discontinuous. O'Connor discusses in para. [0036] that the video stream is stored as separate files 001 and 009 on a hard disk. However, O'Connor fails to discuss in para. [0037], regarding using a circular buffer, whether pointers or other control information are used such that any non-adjacent files that are recorded to, will be assigned to sequential logical blocks in the circular buffer. That is,

O'Connor fails to detail the specific logical address assignment scheme that is used in any circular buffer.

Rather, O'Connor only discusses pointers to the beginning and ending points of the temporary buffer. Applicant submits that pointers to the beginning and ending points of the temporary buffer fail to describe or suggest the claimed "assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer."

Further, in para. [0036], O'Connor merely discusses that a video stream may be stored in separate files. However, how the files correspond with physical blocks or sectors on the hard disk is not discussed. Applicant submits that even if the video stream is stored in separate files, that the files may be located in adjacent blocks on the disk. Accordingly, O'Connor is silent regarding how files correspond with physical blocks on the disk.

Therefore, in view of the above, Applicant respectfully submits that O'Connor fails to discuss or suggest the claimed "assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer."

Claim 1 also requires that the assignment of physically discontinuous free blocks to sequential logical blocks in a circular buffer is based on the control information. The Office Action relies upon FIG. 14, and paras. [0072]-[0077] of O'Connor as discussing "storage is provided based on the information being entered into the system."

FIG. 14 and paras. [0072]-[0077] of O'Connor appear to discuss an example of using a buffer to store incoming video, and a buffer used to store outgoing video. Specifically, here, O'Connor discusses an example as summarized in para. [0037], where pointers are maintained for the beginning and ending points of the temporary buffer, and the updating of the pointers as newer portions of the video stream are received and/or older portions of the video stream are overwritten.

Therefore, again, here, O'Connor discusses a buffer, however, whether the buffer units 1404, 1408, and 1406, of O'Connor are assigned to physically discontinuous free blocks in a disk recording area, is not discussed or suggested. O'Connor is entirely silent in FIG. 14, and paras. [0072]-[0077] how the buffers are correlated to actual physical locations on the disk. Rather, O'Connor is only concerned with discussing the updating of a buffer so that older portions of video stream are overwritten with newer incoming portions. How the physical blocks of the storage area are assigned to the buffer is not discussed or suggested in O'Connor.

Therefore, whether the assignment is of physically discontinuous free blocks in a disk recording area is also not discussed or suggested.

Regarding "storage provided based on the information being entered into the system," as set forth in the Office Action on page 6, in reliance upon O'Connor, Applicant is uncertain exactly what interpretation the Office Action intends to set forth.

Specifically, claim 1 requires that the assignment of physically discontinuous free blocks to sequential logical blocks in a circular buffer is based on the control information.

As the cited passages of O'Connor fail to describe or suggest any correlation between the buffer and physically discontinuous free blocks in O'Connor, Applicant submits that O'Connor therefore also fails to discuss or suggest that assignment of physically discontinuous free blocks to a buffer is "based on control information."

Therefore, any "information being entered into the system," in O'Connor in paras. [0072]-[0077], seems to be directed towards management of the buffer only, that is, the order of buffers 1404, 1408, and 1406, of O'Connor, as they are designated in a memory stack. However, how buffers are designated in a memory stack, still fails to describe or suggest the buffers relation to "physically discontinuous free blocks in a disk recording area," as claimed.

Accordingly, Applicant submits that O'Connor further fails to describe or suggest the claimed "assign ... based on the control information."

C. The Combination of McIlvain and O'Connor Does Not Discuss Assignment of Blocks

Applicant submits that as neither McIlvain nor O'Connor describe or suggest the assignment of blocks, as set forth under sections A and B above, therefore, even if the discussion of McIlvain and O'Connor were combined, their combination would also fail to describe or suggest the claimed "using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer, based on the control information when a time-delayed viewing mode is selected."

Accordingly, Applicant submits that claim 1, and claims 2-6 and 8, which depend therefrom, and recite patentably distinct features of their own, patentably distinguish over the cited art of record.

Amended claim 18 at least recites:

> a video stream storing area which records video streams, comprising:
>
>> video stream blocks which are physically discontinuously

arranged and assigned sequentially within a circular buffer, and
which are used to record video streams for time-delayed viewing;
and

free blocks which are logically assignable to the circular
buffer, or which record other video streams during a mode other
than a time-delayed viewing mode; and

a control information area which stores control information relating
to the video stream storing area,

wherein the video stream blocks are arranged physically
discontinuously based on the control information stored in the
control information area.

Therefore, for at least the reasons set forth above regarding claim 1, Applicant submits
that claim 18, and claim 20, which depends therefrom, and recites patentably distinct features of
its own, patentably distinguishes over the cited art.

Favorable reconsideration and withdrawal of the rejection against claims 1-6, 8, and 18-
20 are respectfully requested.

Regarding the rejection against claims 7, and 9-17 under 35 U.S.C. § 103(a) as being
over McIlvain in view of O'Connor, and in further view of Aoki, Applicant respectfully traverses
this rejection below.

Specifically, regarding claim 7, Applicant submits that Aoki fails to cure the deficiencies
of McIlvain and O'Connor, as set forth above regarding claim 1 from which claim 7 depends.
Therefore, for at least the reasons set forth above regarding claim 1, and for the additional
patentably distinct features recited in claim 7, Applicant submits that claim 7 patentably
distinguishes over the McIlvain, O'Connor and Aoki, whether considered alone, or in
combination.

Amended claim 9 at least recites:

using a processor to assign physically discontinuous free blocks in
a disk recording area to sequential logical blocks in a circular
buffer and recording video streams for time-delayed viewing in the
circular buffer, based on the control information when a time-
delayed viewing mode is selected

Applicants submit that Aoki fails to cure the above described deficiencies of McIlvain and
O'Connor, as set forth above regarding claim 1. Therefore, Applicant submits that none of
McIlvain, O'Connor, or Aoki, whether considered alone or in combination, describe or suggest at
least the above features of claim 9.

Further, claim 9 at least recites:

> assigning free blocks of the disk recording area and recording
> video streams of a channel to be recorded in the assigned
> physically discontinuous free blocks when a recording mode is
> selected during the time-delayed viewing mode, assigning free
> blocks nearest to the recorded free blocks as the circular buffer
> blocks, and recording the video streams for time-delayed viewing
> in the assigned circular buffer blocks

The Office Action fails to provide a citation within the substance of the rejection against claim 9, on page 14, to the cited art regarding these specific features of claim 9. Specifically, claim 9 recites "assigning free blocks **nearest to the recorded free blocks** as the circular buffer blocks."

However, in the Response to Arguments section, the Office Action on page 4, states "The reproduction of free blocks are provided to the nearest recorded and reproduced blocks," but fail to provide a citation to Aoki for this conclusion. Here, the Office Action does cite to col. 1, lines 12-41 of Aoki as discussing "a system wherein reproduction of information is done through the use of a ring buffer."

Applicant submits that the cited passage of Aoki merely discusses the MPEG encoding method which takes blocks, where in this context, blocks are MPEG blocks, or a minimum unit of motion compensative prediction, and predictive encodes them using a DCT transform. Here, Aoki is not discussing how MPEG blocks are stored at all on a hard drive. Rather, here, Aoki is merely discussing an image compression method.

Therefore, Applicant submits that Aoki fails to discuss or suggest the claimed "assigning free blocks nearest to the recorded free blocks as the circular buffer blocks," at least because the cited passage of Aoki, as set forth in the Response to Arguments section, fails to be discussing data storage at all.

Accordingly, Applicants submit that none of McIlvain, O'Connor, or Aoki, whether considered alone or in combination, describe or suggest the features of claim 9. Therefore, Applicant respectfully submits that claim 9, and claims 10-11 which depend therefrom, and recite patentably distinct features of their own, patentably distinguish over the cited art.

Claim 12 at least recites:

> using a processor to assign physically discontinuous free blocks in
> a disk recording area to sequential logical blocks in a circular
> buffer and recording video streams for time-delayed viewing in the
> assigned circular buffer blocks, based on the control information

when a time-delayed viewing mode is selected;

Applicants submit that <u>Aoki</u> fails to cure the above described deficiencies of <u>McIlvain</u> and <u>O'Connor</u>, as set forth above regarding claim 1. Therefore, Applicant submits that none of <u>McIlvain</u>, <u>O'Connor</u>, or <u>Aoki</u>, whether considered alone or in combination, describe or suggest at least the above features of claim 12.

Claim 12 further at least recites:

> assigning free blocks of the disk recording area, recording video
> streams of a channel to be recorded in the assigned <u>physically</u>
> <u>discontinuous</u> free blocks, assigning free blocks nearest to the
> recorded free blocks as the circular buffer blocks, and recording
> video streams for time-delayed viewing in the assigned circular
> buffer blocks, when a recording mode is selected together with the
> time-delayed viewing mode

Therefore, at least in view of the above remarks regarding claim 9, Applicant submits that claim 12 patentably distinguishes over the cited art.

Claim 12 still further at least recites:

> reading free blocks to be reproduced based on the control
> information, assigning free blocks nearest to the reproduced free
> blocks as the circular buffer blocks, and recording the video
> streams for time-delayed viewing in the assigned circular buffer
> blocks, when a reproduction mode is selected together with the
> time-delayed viewing mode.

The Office Action fails to provide a citation within the substance of the rejection against claim 12, on page 15, to the cited art regarding these specific features of claim 12. Specifically, claim 12 recites ", when a reproduction mode is selected together with the time-delayed viewing mode."

However, in the Response to Arguments section, the Office Action on page 4, appears to set forth that <u>Aoki</u> discusses these features in col. 4, lines 25-67. Specifically, the Office Action states "Aoki teaches reproduction modes being selected based on the data being processed."

Applicants submit that the Office Action's interpretation of <u>Aoki</u> of reproduction modes being selected based on data being processed still fails to describe or suggest "reading free blocks ... when a reproduction mode is selected together with the time-delayed viewing mode." That is, whether one reproduction mode or another is selected does not meet the claimed "reproduction mode is selected together with the time-delayed viewing mode." The selection of a reproduction mode together with a time-delayed viewing mode is not discussed in <u>Aoki</u>.

Rather in the cited passage, col. 4, lines 25-67, Aoki merely discusses controlling a storage means so that an unread data area and an already read data area in the storage means take about half of a total memory capacity, respectively. However, what mode is selected when the storage means is controlled, or further, that "a reproduction mode is selected together with the time-delayed viewing mode," is not described in the cited passage of Aoki.

Therefore, Applicant submits that Aoki fails to cure the deficiencies of McIlvain, and O'Connor. Accordingly, Applicants submit that none of McIlvain, O'Connor, or Aoki, whether considered alone or in combination, describe or suggest the features of claim 12. Therefore, Applicant respectfully submits that claim 12, and claim 13 which depends therefrom, and recites patentably distinct features of its own, patentably distinguish over the cited art.

Claim 14 at least recites:

> using a processor to assign physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer and recording video streams for time-delayed viewing in the assigned circular buffer blocks, based on the control information when a time-delayed viewing mode is selected; and

> reading blocks to be reproduced based on the control information, assigning free blocks nearest to the reproduced free blocks as the circular buffer blocks, and recording the video streams for time-delayed viewing in the assigned circular buffer blocks, when a reproduction mode is selected together with the time-delayed viewing mode.

Therefore, at least in view of the above remarks regarding claim 12, Applicant submits that claim 14 patentably distinguishes over the cited art.

Claim 15 at least recites:

> using a processor to assign free blocks of a recording disk area;

> recording video streams of a channel to be recorded in the assigned free blocks;

> assigning free blocks nearest to the recorded free blocks as logical blocks in a circular buffer; and

> recording the video streams for time-delayed viewing in the assigned circular buffer blocks.

Therefore, at least in view of the above remarks regarding claim 9, Applicant submits that claim 15 patentably distinguishes over the cited art.

Claim 16 at least recites:

> reading blocks to be reproduced based on the control information;

using a processor to assign free blocks nearest to the reproduced
free blocks as logical blocks in a circular buffer; and

recording video streams for time-delayed viewing in the assigned
circular buffer blocks

Therefore, at least in view of the above remarks regarding claim 9, Applicant submits that claim 16 patentably distinguishes over the cited art.

Claim 17 at least recites:

recording a video stream in free blocks of a disk recording area or
reading a recorded video stream recorded in the disk recording
area; and

using a processor to assign free blocks nearest to the recorded or
reproduced free blocks as logical blocks in a circular buffer.

Therefore, at least in view of the above remarks regarding claim 9, Applicant submits that claim 17 patentably distinguishes over the cited art.

Favorable reconsideration and withdrawal of the rejection against claims 7 and 9-17 are respectfully requested.

Regarding claims 21, 23-26, 28-32, rejected under 35 U.S.C. § 103(a) as being unpatentable by Aoki, in view of Barton, and in further view of O'Connor, Applicant respectfully traverses this rejection.

Claim 21 at least recites:

a controller which assigns physically discontinuous free blocks in a
disk recording area to sequential logical blocks in a circular buffer,
based upon the control information in response to a time-delayed
viewing mode being selected, and which records video streams for
time-delayed viewing in the assigned circular buffer blocks

The Office Action appears to be interpreting FIGS. 4a-4c of Aoki and col. 7, line 59 – col. 8, lines 1-34 as discussing the above features. However, here, Aoki merely discusses states/positions of read pointers RP and write pointers WP, but fails to discuss or suggest the assignment of the pointers in the buffer to "physically discontinuous free blocks in a disk recording area," as claimed. Rather, Aoki is silent regarding the position of the physical free blocks of a disk recording area with respect to each other. Instead, Aoki discusses only a ring buffer.

Therefore, Applicant submits that Aoki fails to describe or suggest the features of claim 21. The Office Action further appears to rely upon O'Connor as discussing the claimed "assigns

... based upon the control information in response to a time-delayed viewing mode being selected."

However, as discussed above regarding claim 1, O'Connor fails to describe or suggest "control information," as claimed, and therefore, Applicant submits that O'Connor fails to cure the deficiencies of Aoki.

The Office Action further appears to rely upon Barton in FIGS. 4, 6, and 9, and col. 5, lines 3-32, and col. 8, lines 9-67, as discussing the claimed "assigns ... based upon the control information in response to a time-delayed viewing mode being selected." However in col. 5, Barton merely discusses parsing an input stream for MPEG events. Column 8, lines 9-67 merely discusses software modules (classes) which manage flow control in the system.

However, neither cited passage or the FIGS. in Barton discuss or suggest specifically that the assignment of "physically discontinuous free blocks in a disk recording area to sequential logical blocks in a circular buffer," is "based upon the control information." That is, the cited passages are silent regarding how the free blocks in a disk recording area are assigned to logical blocks in a circular buffer.

Therefore, Applicant respectfully submits that Barton fails to cure the deficiencies of Aoki and O'Connor, and therefore, that none of Aoki, O'Connor or Barton, whether considered alone or in combination, describe or suggest the features of claim 21.

Accordingly, Applicant submits that claim 21, and claims 23-26, and 28-31 which depend therefrom, and recite patentably distinct features of their own, patentably distinguish over the cited art.

Claim 32 at least recites:

> a controller which records a video stream in physical free blocks of
> the recording medium or reads a recorded video stream recorded
> on the recording medium and assigns physical free blocks nearest
> to the recorded or reproduced physical free blocks as logical
> circular buffer blocks based on the control information

Therefore, for at least the reasons set forth above regarding claim 21, Applicant submits that claim 32 patentably distinguishes over the cited art.

Claims 22 and 27 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Aoki in view of Barton in further view of U. S. Patent 5,884,284 to Peters et al. (Peters). This rejection is respectfully traversed.

Favorable reconsideration and a withdrawal of the rejection against claims 21, 23-26, and 28-32 are respectfully requested.

Applicants respectfully submit that <u>Peters</u> fails to cure the above described deficiencies of <u>Aoki</u> and <u>Barton</u> as applied above regarding claim 21 from which claims 22 and 27 respectively depend. Therefore, for at least the reasons set forth above regarding claim 21, Applicants submit that claims 22 and 27 patentably distinguish over the cited art.

Favorable reconsideration and a withdrawal of the rejection against claims 22 and 27, are respectfully requested.

CONCLUSION

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

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